Claims

1. [Original] A potassium ytterbium double wolframate single crystal, of formula $KYb(W0_4)_2$, optionally doped with one or more ions of the rare earth elements.

2. [Original] A potassium ytterbium double wolframate single crystal, according to claim 1, of formula $KYb(W0_4)_2$, whose crystallographic structure belongs to the monoclinic system, spatial group C2/c.

3. [Original] A potassium ytterbium double wolframate single crystal, according to claim 2, whose unit cell parameters are: a = 10.590(4) A, b = 10.290(6) A, c = 7.478(2) A and $\beta = 130.70(2)^0$, with Z = 4.

4. [Original] A potassium ytterbium double wolframate single crystal, according to claim 2, whose morphology shows a crystal habit comprising the faces (110), (111), (010) and (310).

5. [Original] A potassium ytterbium double wolframate single crystal, according to claim 2, wherein the positive crystallographic axis *b* emerges from the drawing (Figure 3); the main optical axis Ng is located at a 19^0 angle clockwise from the crystallographic axis *c*; the main

optical axis Nm is located at 59.7^0 from the crystallographic axis *a* turning clockwise towards *c*; and the main optical axis Np is parallel to the crystallographic axis *b*.

6. [Original] A potassium ytterbium double wolframate single crystal, according to claim 2, which shows optical absorption in the 820 - 1,100 nm range.

7. [Original] A potassium ytterbium double wolframate single crystal, according to claim 2, which luminescently emits blue light (λ = 480 nm) when pumped with infrared radiation of λ = 982 nm.

8. [Presently Amended] A potassium ytterbium double wolframate single crystal, according to claim 1, of formula $KYb(WO_4)_2$, doped with a lanthanide element ion.

9. [Original] A potassium ytterbium double wolframate single crystal, according to claim 8, in which the amount of doping element present in said doped KYbW single crystal ranges from 0.1% to 20% atoms of the doping element vs. potassium and ytterbium.

10. [Original] A potassium ytterbium double wolframate single crystal, according to claim 8, wherein said lanthanide element is erbium.

11. [Original] A potassium ytterbium double wolframate single crystal, according to claim 10, wherein the erbium doping distribution coefficient in KYbW is greater than 1.

12. [Original] A potassium ytterbium double wolframate single crystal, according to claim 8, which luminescently emits green light (λ = 530 nm) when pumped with infrared radiation of λ = 982 nm.

13. [Withdrawn] A procedure for the production of a potassium ytterbium double wolframate single crystal, of formula $KYb(W0_4)_2$, optionally doped with one or more ions of the rare earth elements, according to any of the claims 1 through 12, which comprises the mixing and dissolving of the raw materials forming a solution comprising a solvent and a solute, at a temperature above the saturation temperature, for an appropriate period of time, to obtain a homogeneous solution which shows both an axial and radial thermal gradient which favors the nucleation on the center of the surface of the solution, introducing a KYbW seed held onto an alumina rod and fastened with platinum wire, and place it on the center of the surface of the solution in order to focus the crystalline growth on this single spot and slowly cool down the solution, in order to achieve the supersaturation of the solution and the formation of the single crystals which are withdrawn from the solution and are slowly cooled down to room temperature.

14. [Withdrawn] A green or blue emitting solid state laser, pumped by an infrared radiation diode comprising a potassium ytterbium double wolframate single crystal, of formula $KYb(WO_4)_2$, optionally doped with one or more ions of the rare earth elements, according to any of the claims 1 through 12.

15. [New] The method of using product of claim 1 to obtain a blue or green emitting solid state laser comprising pumping the product of claim 1 with an infrared radiation diode laser.

16. [New] The method of using product of claim 3 to obtain a blue or green emitting solid state laser comprising pumping the product of claim 3 with an infrared radiation diode laser.